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$$\frac{p_1}{p_1-1}\cdot\frac{p_2}{p_2-1}\cdots\cdots\frac{p_i}{p_i-1}\leq\frac{3}{2}\cdot\frac{4}{3}\cdots\cdots\frac{i+2}{i}=\frac{i+2}{2}.$$

Hence we should have $n<\frac{i+2}{2}$, or $i>2n-1$.

PROBLEMS FOR SOLUTION.

ALGEBRA.

256. Proposed by THEODORE L. DeLAND, Treasury Department, Washington, D. C.

Three men, A, B, and C, rented a pasture for a fixed amount, each to pay per month in proportion to the stock pastured. During the first month A put in 3 horses and B and C each some horses, and B paid for the month $6, but A and C each defaulted payment. During the next month each put in one more horse, and C paid for the month $7.20, but A and B each defaulted payment. During the next month each put in one more horse, and A paid his bill for the month, $5, but B and C each defaulted.

Required: (1) the rent of the pasture per month; (2) the number of horses B and C each put in during the first month; and (3) the amount A, B, and C, each, owed for the unpaid service.

257. Proposed by L. E. NEWCOMB, Los Gatos, Cal.

Solve (1) $x+y=10$, (2) $3x=\log_{10}y$.

258. Proposed by R. D. CARMICHAEL, Hartselle, Ala.

Sum the infinite series $\frac{n^2}{(4n^2-1)^2}$ beginning with $n-1$, n being always odd.

CALCULUS.

216. Proposed by R. D. CARMICHAEL, Hartselle, Ala.

Find the limit of the sum of the series

$$\frac{n}{n^2+1^2}+\frac{n}{n^2+2^2}+\frac{n}{n^2+3^2}+\cdots\cdots+\frac{n}{n^2+m^2},$$

when n and m are indefinitely increased. (Distinguish the several cases arising from the different *relative* values of m and n.)

217. Proposed by S. A. COREY, Hiteman, Iowa.

In *The Analyst*, Vol. II, p. 120, 1875, G. W. Hill finds by the method of mechanical quadrature the value of $\int_0^{\frac{1}{2}\pi}\frac{xdx}{\sin x[1+.16\cos^2x]^{\frac{3}{2}}}$ to be 1.6576363.

Evaluate the definite integral by some other method and verify above result.